ORIGINAL

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United States Coast Guard

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The Secretary
Federal Communications Commission
1919 M Street
Room 222
Washington, D.C. 20554

Dear Mr. Secretary

Enclosed are Comments of the U.S. Coast Guard in response to the Second Further Notice of Proposed Rulemaking in PR Docket No. 92-257, Amendment of the Commission's Rules Concerning Maritime Communications..

Sincerely,

J. D. HERSEY JR.
Chief, Spectrum Management Division
By direction

Encl: (1) USCG Comments

Copy: Mr. Roger Noel, FCC

Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	PR Docket No. 92-257
Amendment of the Commission's Rules	)	RM-7956, 8031, 8352
Concerning Maritime Communications	)	

COMMENTS OF THE UNITED STATES COAST GUARD

The U.S. Coast Guard respectfully submits the following Comments in the Second Further Notice of Proposed Rulemaking in the above-captioned proceeding.

Background

1. In the Second Report and Order in this proceeding released on 26 June 1997, the Commission eliminated the requirement for VHF public coast stations to provide a showing of channel loading prior to assignment of additional radio channels. In this Second Further Notice of Proposed Rulemaking, the Commission seeks comments on both its proposal to use competitive bidding procedures in assigning these additional channels, and to reconsider its treatment of public coast stations. The U.S. Coast Guard comments on three issues introduced in this Further Notice: Public safety use of the VHF public coast station spectrum, authorized use of narrowband technologies, and the safety watch on VHF channel 16.

Public Safety Use of the VHF Public Coast Spectrum

2. In paragraph 86 of the Notice, the Commission notes its "continuing commitment to take measures to ensure that the current and future communications needs of the public safety community are addressed", and refers to the Final Report of the Public Safety Wireless Advisory Committee. In that connection, the Commission sought comment on whether there

are any steps that it should take to facilitate use of this VHF public coast spectrum by public safety entities, stating that "there may be opportunities for public safety entities to share public coast spectrum in land-locked areas, far from navigable waterways." The Commission further asked commenters "to discuss the public safety uses that can be implemented in that spectrum and to identify any operational limitations associated thereto in order to protect the current and future maritime operations in the band."

3. The U.S. Coast Guard fully supports the recommendations of the Public Safety Wireless Advisory Committee, as stated by the Department of Transportation in its 21 October 1996 comments to the Commission under WT Docket 96-86, and has no objections to public safety interoperability use of this band, at least 150 miles from navigable waterways, provided there is no possibility of interference to maritime systems. However, we believe these maritime public correspondence bands are not entirely suitable for public safety interoperability purposes within 150 miles, for the following reasons:

   a. This spectrum will increasingly be used for maritime safety. The U.S. Coast Guard and others will increasingly have requirements to contract for at least some safety services from public coast stations in this band. Additionally, as described further below, the Coast Guard has a requirement for narrowband channels from this public correspondence band for ship automatic identification systems and related safety purposes using narrowband channels. No situation should be allowed to exist where one safety service interferes with another.

   b. Navigable waters extend far inland, covering most major metropolitan areas. For example, of the 25 largest U.S. cities ranked by population in the 1990 census by the Department of Commerce Census Bureau, 19 cities, i.e. 76%, are close to navigable waters and are within at least partial coverage of the U.S. Coast Guard's VHF National Distress System and stations providing maritime public correspondence services. This public correspondence band would not be available for public safety use in areas where they are most needed.

c. Maritime's duplex channel use of this public correspondence band would preclude interoperability with land mobile public safety users on simplex channels. Maritime mobile radios, which transmit on one frequency and receive on a different frequency in this band, can only communicate with shore-based radios which transmit and receive on the opposite frequencies. Mariners using these radios, including the U.S. Coast Guard, cannot communicate directly with one another or with land mobile radios in this band for that reason.

4. The U.S. Coast Guard and other maritime interests needing interoperability with land mobile public safety users would derive no benefit from the Commission's proposal, despite having radios capable of operating in these bands, for the reasons described above. Coast Guard safety and law enforcement operations need to be interoperable with other public safety operations.

5. Public Safety Use of Public Coast Stations. During an emergency, both public safety and maritime safety entities could operate through existing public coast stations using public coast spectrum. The U.S. Coast Guard could support such operation, which serves the Commission's interests in securing public safety interoperability, and also resolves the problems described in paragraphs 3 and 4 above.

6. Designation of Mutual Aid Channels. The Department of Transportation, in comments filed on October 21, 1996, on the Commission's Notice of Proposed Rulemaking concerning public safety agency communication requirements, WT Docket 96-86 paragraph 39, stated that "One promising approach to provide for interoperability among federal, state, and local agencies is the designation of Universal Mutual Aid Channels. This solution would lessen the financial impact of implementation. It could also be potentially useful in the internationally-recognized VHF maritime band. DOT will cooperate in any effort toward this end." DOT Comments page 9. The U.S. Coast Guard, in supporting that recommendation, suggests the Commission consider VHF maritime channels such as 6, already designated for

search and rescue operations, and 15, designated for receive-only broadcasts of environmental conditions, as mutual aid channels for safety purposes during an emergency, as authorized by the Coast Guard District Commander or, if applicable, the Captain of the Port (33 CFR 160.3). We believe that use of maritime VHF channels could better help resolve public safety interoperability communications.

Authorized Use of Narrowband Technologies

7. In paragraph 96, the Commission proposed that "each regional licensee, as well as incumbent licensees, be authorized to use narrowband technologies...We seek comment on this proposal and the following...What would be the advantages and/or disadvantages of not specifying a narrowband channel plan?".

8. The U.S. Coast Guard filed with the Commission a petition for rulemaking, entitled "Amendment of Part 80 of the FCC Rules to Designate Maritime Channels and Allow Operation of Automatic Identification Systems and Related Safety Systems" on 4 August 1997. A copy of that petition is enclosed. In it we noted that because transmitters operating on 12.5 kHz narrowband channels cause interference to receivers separated by less than 11-13 miles operating on adjacent wideband channels, narrowband operation was presently only possible in the duplex public correspondence band. This conclusion is based upon a study made by the National Telecommunications and Information Administration (NTIA), a draft of which was submitted with the petition. In the United States, the only available internationally recognized VHF maritime duplex channels are from spectrum designated for public coast station use. The Coast Guard in that petition indicated its need for at least two narrowband channels from that band for safety purposes. The United States has proposed to the International Telecommunications Union (ITU) World Radio Conference, meeting in Geneva in October 1997 (WRC 97), that 12.5 kHz narrowband channel use be recognized in the VHF maritime band, and recommended that ITU Appendix 18, the VHF maritime

channel plan, be included on the agenda for WRC 99 so that use of these narrowband channels could be internationally agreed.

9. Noting that no other internationally recognized VHF maritime spectrum other than this public correspondence band is apparently available for narrowband operation, the Coast Guard recommends that regional and incumbent licensees not be authorized to use narrowband technologies without restrictions, until the following issues are resolved:

    a. Duplex narrowband channels for safety purposes are made available as proposed by the Coast Guard in its petition;
    b. The pending ITU action recognizing use of narrowband channels is completed; and
    c. Part 80 general technical standards are adopted and maritime radios are type accepted for narrowband operation.

10. Both the NTIA studies referred above and the need that use of these channels be in accordance with ITU standards indicate that rules will need to be developed for these narrowband channels. Once the issues described above are resolved, the U.S. Coast Guard has no objection to public coast stations using narrowband channels in these bands, provided that such use not in any way prejudice the Coast Guard petition referred above.

Safety Watch

11. In paragraph 102, the Commission, in considering "the Coast Guard's vast coverage area and the administrative burdens" associated with processing VHF channel 16 watchkeeping exemption requests, proposed that licensees not be required to submit individual requests to the Commission, but instead, "each licensee would be responsible for: (1) determining whether the '95 percent' criteria is met, (2) notifying the appropriate Coast Guard district office 30 days prior to discontinuing the watch, and (3) resuming the watch at the request of the Coast Guard or the Commission." The Commission then sought comment on whether additional procedures are necessary in order to ensure safety of life at sea.

12. Since the existing U.S. Coast Guard VHF National Distress System, from which a VHF channel 16 distress watch is now maintained, is aging and has many gaps in coverage, we may request that a licensee continue a watch on channel 16 in certain areas, temporarily during a system outage or until a replacement Coast Guard system is in place, or permanently. We may also ask a licensee that has suspended its watch, to remain capable of immediately returning to that watch, or providing the Coast Guard direct dial-up access to the necessary channel 16 transceiver at no charge, so that the Coast Guard may maintain a watch, during an emergency. With those conditions, the U.S. Coast Guard can accept these changes proposed by the Commission. We note that the addresses of the appropriate Coast Guard district offices are listed in the USCG "Standard Distribution List", available by Internet World Wide Web at URL http://www.dot.gov/dotinfo/uscg/hq/g-s/g-si/sdl/sdlindex.htm, and that a map of district area of responsibilities is available from URL http://www.navcen.uscg.mil/lnm/maplnm.htm. Coverage charts of existing Coast Guard National Distress System transceivers is available from URL http://www.navcen.uscg.mil/marcomms/cgcomms/nds.htm, noting that actual coverage may vary from location to location. The proper district routing symbol that should be used in safety watch suspension notifications is "(o)".

Respectfully Submitted,

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Chief, Spectrum Management Division
By Direction of the Commandant

Commandant (G-SCT-2)
United States Coast Guard
Washington, D.C. 20593-0001

September 12, 1997

Enclosure: U.S. Coast Guard Petition

ENCLOSURE(1)

Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	RM-
Amendment of Part 80 of the FCC Rules	)	
to Designate Maritime Channels and Allow	)	
Operation of Automatic Identification Systems	)	
and Related Safety Systems	)	

PETITION FOR RULEMAKING

In accordance with Section 1.401 of the Commission's Rules, the U.S. Coast Guard respectfully submits this petition for rulemaking to establish and make available VHF maritime narrowband (interstitial) channels for Automatic Identification Systems (AIS) and related safety systems used in new and existing vessel traffic services (VTS) and in nationwide ports and waterways.

Introduction

1. The Congressionally-mandated Ports and Waterways Safety System (PAWSS) project provides Vessel Traffic Services to facilitate the safe and efficient transit of vessel traffic to prevent collisions, groundings, and environmental damage associated with these accidents. The project is a Department of Transportation (DOT), Level-1, major acquisition. PAWSS has been a joint-development effort by the U.S. Coast Guard and the maritime stakeholders in the United States through a national dialog process, which has established the need for a nationwide "transponder-based VTS." Accordingly, the U.S. Coast Guard is developing requirements and specifications for new VTS systems that include AIS. These requirements are also being included in the U.S. Coast Guard's VTS upgrade program, which is currently in progress. Related digital systems, such as future automatic broadcasts of safety information to ships, may also use these channels. Since the AIS transponder system has been determined to be the primary sensor in the system, frequencies are urgently needed to support these new requirements.

These transponders and related safety systems will require that at least two VHF marine band channels in each area be available for this use. As explained below, most practical candidates for these systems are derived from the VHF maritime public correspondence channels. Initially, the Coast Guard will purchase transponders that will be tested onboard selected vessels.

AIS Radio Assignments are Needed by Both Government and Non-Government to Meet a Maritime Safety Requirement

2. Under PAWSS, the Coast Guard has engaged in outreach efforts to develop a process for selecting ports and determining capabilities. This includes pursuing cooperative arrangements with stakeholders which may lead to partnerships between the U.S. Coast Guard and industry. Because the VTS upgrade program will include the use of non-government stations, frequencies assigned to PAWSS will be used by both Federal Government and non-Government ship and shore stations. None of these frequency assignments are intended for exclusive use by the government.

Channels Selected for AIS Must be Internationally Recognized for Maritime Use

3. The maritime mobile frequency band (156-174 MHz) supports maritime communications worldwide using 25 kHz channels. Appendix 18 of the International Telecommunications Union (ITU) Radio Regulations (RR) defines the channels of the maritime mobile service. These channels support a variety of communication functions, including public correspondence, intership and ship-to-coast, coast-to-ship, port operations, calling and various safety functions. Safety functions include distress, search-and-rescue, ship movement, navigation (bridge-to-bridge) communications, and maritime safety information broadcasts. Although most communications in the maritime mobile service have utilized analog FM techniques for voice communications, requirements for digital information exchange are now increasing substantially.

AIS Implementation Requires the use of Digital Channels

4. To that end, administrations are planning or have already begun implementing modern vessel traffic safety services which include elements of "the voiceless VTS" (VTS/AIS). PAWSS/VTS includes an automatic means of tracking vessels (AIS) and transmitting essential safety

information digitally, both ship-to-ship and ship-to-shore. The implementation of these systems is essential to improve safety of life, safety of navigation, and protection of the environment. These systems require radio channels implemented in accordance with various international standards and recommendations[1]. In addition, the U.S. maritime community has forwarded two reports documenting their requirements for a VTS solution that is consistent port to port, both nationally and internationally.[2] This service includes the exchange of traffic and harbor data. These systems will take advantage of evolving digital technology in developing the "voiceless VTS" in a spectrum-efficient manner. The U.S. Coast Guard, with assistance from the National Telecommunications and Information Administration, has invested several labor-years in equipment testing and technical submissions to the ITU, to improve spectrum efficiency in this band through the use of 12.5 kHz narrowband channels.

5. Specifically, the U.S. Coast Guard has now included AIS in its requirements for new PAWSS acquisitions and for upgrades to existing VTS systems. For example, the Ports And Waterways Safety System (PAWSS) Draft Specification, which includes as a requirement the implementation of Recommendation ITU-R M.825-2, calls for "AIS working channels". Since it is a safety service, AIS channels must be free from interference from all other (non-AIS) transmissions by both base and mobile equipment.

Dedicated Channels Should Be Unnecessary

6. Because ship and shore AIS systems should be capable of immediate and automatic tuning to any frequency recognized by Appendix 18 of the International Radio Regulations or ITU-R Recommendation 1084, dedicated channels should be unnecessary, and because of the potential for interference to adjacent wideband (25 kHz) channels depending upon location, dedicated channels may be undesired.

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[1] Recommendation ITU-R M.1084, Recommendation ITU-R M.825, Report ITU-R M.2010.

[2] "Baseline VTS Recommendations from: The Ports and Waterways Safety Committee", April 17, 1997; "Summary of Guidance from the National Dialog on Vessel Traffic Services", April 1997.

There is an Urgent Need for AIS Channels

7. The U.S. Coast Guard has immediate plans to implement AIS systems at selected ports and waterways, including Puget Sound (beginning on a limited scale with the state of Washington in 1997) , the lower Mississippi River (beginning with PAWSS trials on 50-100 selected vessels in early 1998), and the Houston-Galveston VTS area (with installation planned for early 1998). Other system implementations will follow in the near future. For that reason, access to at least two channels is urgently needed in each of these areas for AIS purposes by the dates an AIS system is put into place. Temporary authorization for the use of these channels until permanent rules are adopted governing the frequencies are adopted, would be acceptable, in order to meet the required dates for these areas.

The Need for Duplex Channels

8. AIS systems operated in the United States need access to duplex channels for two reasons. First, because of the need to protect wideband (25 kHz) users on channels adjacent to a narrowband (12.5 kHz) channel, only duplex channels can be currently, practically used in a narrowband mode. Second, the AIS systems intended for use may require duplex channels to meet the needs for ship-to-ship navigation safety information exchange.

Tests Show Narrowbanding can only be Accomplished Presently using Duplex Channels

9. In the technical standard Recommendation ITU-R M.1084, two methods have been approved for administrations to implement channels from Appendix 18 to support the stated AIS requirements. Both of these methods involve duplex channels. One method considers the simplex use of duplex channels, where the base side "upper leg" frequency is split off and assigned to AIS. The second method is the interleaving of 12.5 kHz narrowband channels within the duplex channels. The FCC has already approved the implementation of these 12.5 kHz channels in the land mobile service, provided that the land mobile stations are removed by a minimum of 150 miles from navigable waterways. FCC regulations have long adopted the simplex use of maritime duplex channels.

10. Both of these internationally approved methods have been investigated within the U.S. for the possible implementation of VTS/AIS systems. The first method is not practical, since most of the duplex channels in Appendix 18 in the U.S. have already been split by previous FCC rulemaking, with most of the "coast frequencies" (B-sides) already used for land mobile purposes by railroads, land transportation, "broadcast links", and (for channel 88B) all federal government agencies. Of the 35 duplex channels in Appendix 18, only 9 remain available to maritime in the U.S., and these channels have been assigned to "public correspondence." The second method, the use of interleaved 12.5 kHz channels, was investigated through measurements conducted by the United States Coast Guard and the National Telecommunications and Information Administration (NTIA) in cooperation with the Radio Technical Commission for Maritime Services (RTCM) Special Committee SC101. A draft copy of the report[3] of this investigation is enclosed. Specifically, commercial and recreational grade 25 kHz and 12.5 kHz marine radios were tested in laboratory and field environments for susceptibility to adjacent/interstitial channel interference, and for interoperability.

11. The results of these tests showed that the 25 kHz and 12.5 kHz radios can be interoperable. However, introducing new 12.5 kHz radios into the existing 25 kHz environment must be done slowly and very carefully in order to ensure that no interference occurs to users of existing maritime radios. Existing 25 kHz maritime radios will remain in common use for many years, especially among many recreational and small commercial users. Test showed that with most existing maritime radios operating on 25 kHz channels, interference from transmissions on adjacent narrowband channels can be disruptive and serious. Consequently, geographical separation of 11 to 13 miles between adjacently tuned 12.5 kHz radio transmitters and 25 kHz receivers will be necessary in order to prevent interference between users of narrowband and wideband channels. Use of 12.5 kHz channels may not be achievable near 25 kHz channels not

[3] "Assessment of Compatibility Between 25 and 12.5 kHz Channelized Marine VHF Radios", draft final report NTIA TR 97-XX, July 1997. This report was coordinated through RTCM SC101, Special Committee on Digital Selective Calling and Automatic Identification Systems, as it was developed. A draft of this report was approved by RTCM SC101 in July 1996. Final review by NTIA is in process. Upon completion it will also be reviewed for approval by RTCM

exclusively assigned to one user, but shared among a variety of users in the band. For example, use of 12.5 kHz channels near existing 25 kHz simplex channels which allow all base and mobile stations to participate with each other during communications may not be presently possible. Separating transmitters operating on narrowband channels from receivers operating on adjacent wideband channels can be done practically only with existing duplex channels, since their use is restricted to base stations whose geographical locations are known and licensed. The only VHF maritime channels existing in the U.S. that are candidates for implementing narrowband operations on 12.5 kHz are from the existing 25 kHz public correspondence duplex channels, and 228B (162.0125 MHz).

AIS Systems Require the Use of Duplex Channels

12. As noted above, if duplex channels are not available for AIS, the base station transmissions could not be assured to be free from interference from transmissions by mobile stations. Furthermore, it would not be possible to provide the repeater boost that may be needed for wide-area coverage of ship-to-ship position and other data messages. ITU-R Recommendation M.825-2, for example, contains a provision for using a duplex channel for shore-assisted broadcasting of ships position data to other ships. Users who could benefit from the commercial advantages of such a system would be more likely to support a safety system such as PAWSS/VTS.

Channel 228B (162.0125 MHz) Proposal

13. Since channel 228B (162.0125 MHz) straddles the non-government and the federal government band, we propose its use be allowed for maritime mobile purposes, including data purposes, as a shared government/non-government channel, with assignments approved by both FCC and the National Telecommunications and Information Administration (NTIA). The U.S. Coast Guard will coordinate this proposal within NTIA and its Interdepartment Radio Advisory Committee. Since Channel 88A (157.425 MHz) is used as a simplex channel in the U.S., use of channel 228A (157.4125 MHz) should presently not be authorized in U.S. waters.

SC101, and it is expected that this process will be completed soon. The USCG will forward to the FCC copies of the final document as approved by both NTIA and RTCM SC101.

General Technical Standards

14. The U.S. Coast Guard recommends that Part 80 of the Commission's rules be amended to allow radio equipment to operate in the 12.5 kHz channels specified in paragraph 15 below in accordance with ITU-R Recommendation M.1084 Annex 2 and 3, using voice or data modulation, Part 80 power limitations, and emission limitations in accordance with existing Commission rules for 12.5 kHz mobile radio systems.

U.S. Coast Guard Proposal

15. The U.S. Coast Guard requests that the FCC make available interleaved 12.5 kHz channels between public correspondence Channels 24, 84, 25, 85, 26, 86, 27, 87, and 28, for AIS and related PAWSS and VTS upgrade purposes on a shared basis with public correspondence or other uses, on a coordinated need-determined basis, with at least two channels kept available for AIS or AIS related purposes in any given area. The U.S. Coast Guard also requests that the 12.5 kHz channel 228B (162.0125 MHz) also be made available, on a shared government/non-government basis. Because of the immediate need for AIS systems, temporary authorization of these channels should be permitted until the Commission makes a final decision in this matter. Maritime ship and coast radio equipment should be authorized to operate in these bands.

Respectfully Submitted,

/S/

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By Direction of the Commandant

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August 1, 1997